CLAIMS

I claim:

1.   A method for coding image data, the method comprising:

     converting a block of image data into transform coefficients;

     quantizing the transform coefficients such that all, some, or none of the transform coefficients become zero;

     constructing a single entity indicating which transform coefficients are non-zero; and

     coding the single entity as an integer using an arithmetic coder wherein the values of the transform coefficients are coded in any fixed order.

2.   The method for coding image data of claim 1, wherein coding the single entity as an integer further comprises coding the single entity as an integer using an adaptive arithmetic coder.

3.   The method for coding image data of claim 1, wherein coding the single entity as an integer further comprises coding the single entity as an integer using a semi-adaptive arithmetic coder.

4.   The method for coding image data of claim 1, wherein coding the single entity as an integer further comprises coding the single entity as an integer using a non-adaptive arithmetic coder.

5.   The method for coding image data of claim 1, wherein each transform coefficient is coded according to its own context, based on the transform coefficient.

6.   The method for coding image data of claim 2, wherein each transform coefficient is coded according to its own context, based on the transform coefficient.

7.   The method for coding image data of claim 1, wherein the single entity is a bit vector.

8. An apparatus for coding an image, the apparatus comprising a computer device with a processor operating a program comprising instructions for operating the computer device to perform the following steps:

converting a block of image data into transform coefficients;

quantizing the transform coefficients such that all, some, or none of the transform coefficients become zero;

constructing a single entity indicating which transform coefficients are non-zero; and

coding the single entity as an integer using an arithmetic coder wherein the values of the transform coefficients are coded in any fixed order.

9. The apparatus of claim 8, wherein coding the single entity as an integer further comprises coding the single entity as an integer using an adaptive arithmetic coder.

10. The apparatus of claim 7, wherein coding the single entity as an integer further comprises coding the single entity as an integer using a semi-adaptive arithmetic coder.

11. The apparatus of claim 8, wherein coding the single entity as an integer further comprises coding the single entity as an integer using a non-adaptive arithmetic coder.

12. The apparatus of claim 8, wherein the single entity is a bit vector.

13. A bitstream of data generated by a method of coding data, the method comprising:

converting a block of image data into transform coefficients;

quantizing the transform coefficients such that all, some, or none of the transform coefficients become zero;

constructing a single entity indicating which transform coefficients are non-zero; and

coding the single entity as an integer using an arithmetic coder wherein the values of the transform coefficients are coded in any fixed order.

1 14. The bitstream of claim 13, wherein coding the single entity as an integer further
2 comprises coding the single entity as an integer using an adaptive arithmetic coder.

1 15. The apparatus of claim 13, wherein coding the single entity as an integer further
2 comprises coding the single entity as an integer using a semi-adaptive arithmetic coder.

1 16. The apparatus of claim 13, wherein coding the single entity as an integer further
2 comprises coding the single entity as an integer using a non-adaptive arithmetic coder.

1 17. The apparatus of claim 13, wherein the single entity is a bit vector.

1 18. A computer-readable medium that stores instructions for controlling the
2 operation of a computer device to perform data coding according to a method
3 comprising the steps of:
4 converting a block of image data into transform coefficients;
5 quantizing the transform coefficients such that all, some, or none of the
6 transform coefficients become zero;
7 constructing a single entity indicating which transform coefficients are non-zero;
8 and
9 coding the single entity as an integer using an arithmetic coder wherein the values
10 of the transform coefficients are coded in any fixed order.

1 19. The computer-readable medium of claim 18, wherein coding the single entity as
2 an integer further comprises coding the single entity as an integer using an adaptive
3 arithmetic coder.

1 20. The computer-readable medium of claim 18, wherein coding the single entity as
2 an integer further comprises coding the single entity as an integer using a semi-adaptive
3 arithmetic coder.

1 21. The computer-readable medium of claim 18, wherein coding the single entity as
2 an integer further comprises coding the single entity as an integer using a non-adaptive
3 arithmetic coder.

1   22.   The computer-readable medium of claim 18, wherein the single entity is a bit

2   vector.

1   23.   A method of coding data not having a clearly defined relationship, the method

2   comprising:

3   converting the data into transform coefficients;

4   quantizing the transform coefficients such that all, some or none of the

5   transform coefficients become zero;

6   constructing a single entity from the quantized transform coefficients; and

7   coding the single entity using an arithmetic coder wherein the values of the

8   transform coefficients are coded in any fixed order.

1   24.   The method of claim 23, wherein the single entity is a bit vector.

1   25.   A method of decoding a bitstream, the bitstream being coded using a single entity

2   coded as an integer using an arithmetic coder, the method comprising:

3   decoding the single entity wherein the values of transform coefficients are

4   decoded in any fixed order;

5   deconstructing the single entity to determine which coefficients are non-zero;

6   dequantizing the transform coefficients to determine whether all, some or none

7   of the coefficients are zero; and

8   converting the dequantized transform coefficients into block image data.

1   26.   The method of decoding a bitstream of claim 25, wherein the single entity is a bit

2   vector.

1   27.   The method of decoding a bitstream of claim 25, wherein the single entity was

2   coded as an integer using an adaptive arithmetic coder.

1   28.   The method of decoding a bitstream of claim 25, wherein the single entity was

2   coded as an integer using a semi-adaptive arithmetic coder.

1 29. The method of decoding a bitstream of claim 25, wherein the single entity was

2 coded as an integer using a non-adaptive arithmetic coder.